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Infusing mobile technology into undergraduate courses for effective learning

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Abstract

The number of courses higher education institutions are offering online, blended, or web-enhanced traditional classroom setting, continues to grow exponentially. At the same time, there is an upsurge of mobile technology that has multiple capabilities to support different instructional strategies. Among all adult groups, undergraduate students' use of mobile technology in everyday life is relatively highest. This paper identifies the impact of infusing mobile technology in undergraduate course instruction for effective and quality learning. The paper also discusses the benefits of using mobile technology in undergraduate students' learning process.

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Keywords: Mobile Technology; Effective Learning; Web-enhanced; Undergraduate Course.

1. Introduction

Integration of emerging mobile technology is now inevitable in every sphere of life. This phenomenon has led to tremendous interest among educators (Godwin-Jones, 2011). Mobile technology and how they are being used in education has evolved in such a way that the achievement of learning objectives is no longer limited to personal computer, but extended to the use of mobile devices that provide a greater range of applications. As developments in mobile technology progress, more opportunities for mobile technology supported learning environment emerges,

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enhancing the role of mobile technology as learning platform (Asselin & Moayeri, 2011). Mobile technology with its power to change the instruction and learning method are new instrument for education in higher education. The mobile-based learning pedagogical method provides many possibilities (Razaque & Elleithy, 2012). Many educational opportunities are made possible because of unique characteristics of mobile technology and its positive impacts on instruction and learning process. As a result, increasing numbers of higher education institutions are integrating these innovative technology as instructional tools (Musawi, 2011).

Mobile technology refers to the wide range of web-based tools and devices with Apps. Mobile technology in learning, as defined in this paper, involves the mobile digital devices within and between pedagogically designed learning environments or contexts. That is, mobile devices are used as tools to mediate a wide range of learning activities and facilitate collaborative learning environments (Cochrane, 2010). The freedom of time and location is related to the concept of anytime and anywhere access that represents the two main characteristics of mobile technology - mobility and reachability. A mobile learning device could be laptop, Tablet (iPad, Android), e-Reader (Kindle, Nook), and even Smart phone (Godwin-Jones, 2011). Many of these tools provide constant access to learning resources allowing extensive communication and collaboration that are changing instruction and learning environment (Abrantes & Gouveia, 2010).

The *effective learning* process: (1) enables active learning by allowing students to learn anytime, anywhere; (2) facilitates cooperation and teamwork by providing functions such as virtual collaboration; (3) improves learning by facilitating teamwork and group projects, and (4) provide knowledge or information from real world (Sheng, Siau, & Nah, 2010). With its advancement, mobile technology has become more versatile, user friendly, and cost effective. Thus, mobile technology can provide pedagogically designed learning contexts, facilitate learner-generated content (both individual and collaborative) while providing personalized and global social connection (Zhao, Waldman, Perreault, & Truell, 2009). Research found that student centered approach is fundamental to the success of learning process (Male & Pattinson, 2011).

2. Significance of mobile technology as learning tools in undergrad courses

A primary reason for infusing mobile technology in undergraduate courses is students' interest. Today's typical college students have grown up with and been exposed to all different kinds of mobile technology in almost every aspects of their lives. On a daily basis they use laptop, online social media, social networks, cellphones, text messages, RSS feeds, wikis, blogs, online learning tools, and much more. How students integrate these instruments into their lives has been the focus of much attention in research (Labach, 2011). According to a research finding, 92% of undergraduate students are mobile wireless (laptop or cellphone) users – the highest percentage among all adult groups who are using mobile technology in their everyday life (Rainie, 2011). A number of mobile devices are being used in learning environment are: laptop, net book, E-reader (i.e. Kindle, Nook), Tablet (iPad, Android), Smart phone (iPhone, Android, Windows), etc. Being familiar with mobile technology such as Web 2.0, students can find and use information; produce content in various formats such as post, blog, or video; and push content to recipients by various media such as smartphones or laptops (Cassidy, Britsch, Griffin, Manolovitz, Shen, & Turney, 2011, Diaz, 2011).

As the advent of mobile technology has deeply impacted the educational environment and mobile technology is becoming a valuable tool for learning, it is important for educators to know how to keep up with rapid growth of this technological development. Educators need to be adaptable to this emerging technology, as the majority of their students are the generation who grow up and living in the world of mobile technology. The development of mobile technology has generated a considerable amount of excitement among practitioners and academics because it results in shifting the academic environment from traditional settings to mobile learning settings. Increasing number of institutions of higher education offer courses using mobile technology as alternative teaching and learning tools (Razaque & Elleithy, 2012). However, despite the significant potential of mobile technology to be used as powerful learning tools in higher education, its current use appears to be predominantly within a didactic, instructor-centered paradigm, rather than a more general learning environment. Although, mobile technology has been identified as

emerging tools to enhance teaching and learning, but the use of mobile technology in education is in its infancy at best (Cochrane, 2010).

Given that mobile technology for education is a new phenomenon that is gaining popularity, the values of using mobile technology to support education need to be further researched and better understood. In this context, the purpose of this paper is to identify the impact of infusing mobile technology in undergraduate course instruction to ensure effective and quality learning. The paper will also focus on the benefits of using mobile technology in undergraduate students' learning process.

3. The role of mobil technology in improving learning effectiveness

The literature on mobile technology-based education points to a variety of benefits that mobile technology could have on the learning environment. Empirically, the impacts of mobile technology on educational outcomes that are identified in the literature can be classified into two broad categories. Mobile technology impacts learning outcomes by improving access to education while maintaining the quality of education delivered. In addition, mobile technology impact learning outcomes by facilitating alternative learning processes and instructional methods (Cochrane, 2010).

Mobility and Accessibility - The most publicized advantage of mobile technology is mobility, which enables anytime, anywhere learning removing time and space constraints in accessing learning materials. Mobility also enhance capabilities for communication, coordination, collaboration, and knowledge exchange. Students who work full time or travel a lot, can use mobile technology to catch up with school work, lectures, or assignments at their convenient time and place.

Personalized learning - The benefits of mobile technology are not merely limited to increased access to educational services. Mobile technology can enable personalized learning, which is learner-centered and allow students to learn at their own pace. The greater availability of educational resources provides greater opportunity for students to discover and construct new knowledge. Learning using mobile technology can be particularly appealing for those students who have not succeeded in traditional learning environments. Mobile technology presents an appeal simply by presenting something new and exciting for a great array of new generation students. Thus, mobile technology can attract those students who are not encouraged or interested by traditional generalized learning approaches. Providing immediate feedback, mobile technology can ensure continued motivation for those students who are not motivated by traditional educational settings. Mobile technology facilitate designs for personalized learning that encourage diversity in the learning process (Sheng, Siau, & Nah, 2010).

Collaborative learning - The ability of mobile technology to enable any place and any time communication can provide more opportunities for students to interact with instructors, as well as collaboration among students. Students can communicate and interact with peer students, instructors, and experts even when they are traveling. They can work on group assignments in a flexible and efficient way without the need to meet face-to-face. Collaborative learning is a process in which students develop higher-order thinking skills by creating an environment where knowledge is shared among learners in an effort to achieve common learning goals (Brindley, Walti, & Blaschke, 2009). As collaboration is key to learning in today's educational environment, mobile technology has tremendous potential in supporting and improving collaborative learning.

Situated learning - Mobile technology can also facilitate changes in the character of learning modalities that in turn impact learning outcomes (Sheng, Siau, & Nah, 2010). Facilitating alternative learning processes and instructional methods mobile technology can ensure effective learning. Mobile technology facilitate designs for situated learning by providing learning during the course of the activity. For example, using mobile device a botany student can learn in the field, or an engineering student can learn in the workshop. Thus, mobile technology facilitates designs for

authentic learning that targets real-world experience involving relevance and interest of learner (Renes & Strange, 2011).

Communication - The importance of communication between students and instructor in supporting positive learning outcomes is well-documented. The incomplete or ineffective communication is a barrier to effective learning (Hart, 2012). Instructor's quick and timely response and prompt feedback to assignments assure students and promote active learning (Heyman, 2010). Research findings emphasize on communication because good communication among peer students, and students and instructor results in improvement of instructional and learning processes. The greatest benefit derived from mobile technology is the communication that deliver effective learning ensuring collaboration among students and instructor. Mobile devices with learning Apps can ensure this communication. Even if smart phones do not have as many learning capabilities as laptops or tablets have, they provide instructors and students communication opportunities. Consequently, some instructors have begun to use smart phones in teaching because those can facilitate advanced learning environments with even faster response speeds.

4. Conclusion

Mobile technology is changing the way educators think about education. Mobile technology has multiple capabilities to support different instructional strategies and provide an efficient way of delivering course material and improving learning comprehension. Unlike traditional method, mobile technology can enhance student learning by instantly updating vast number of additional learning resources that are easily accessible and provide a low-cost educational solution to the students. Thus, mobile technology has become major resource for teaching and learning in higher education. The most important advantage of mobile technology is its accessibility from anywhere using mobile devices with wireless connection. Mobile technology can also deliver personalized and collaborative learning for students. Almost all undergraduate students are now using mobile technology in their daily life. Consequently, the infusion of mobile technology into undergraduate courses can revolutionize the processes of learning and teaching by changing the educational environment.

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